

HP StorageWorks Fast Recovery Solution for Windows 2003 user guide

Microsoft Exchange 2003
Microsoft SQL 2000

product version: 2.00.00

second edition (June 2004)

part number: B9552-96003

This guide describes how to use the fast recovery solution with Microsoft Exchange 2003 and Microsoft SQL 2000



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HP StorageWorks Fast Recovery Solution for Windows 2003: User Guide

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About this guide

This guide provides information about configuring and using HP StorageWorks Fast Recovery Solutions (FRS) 2003 in a Microsoft Windows 2003 environment running Exchange 2003 or SQL 2000. FRS enables quick recovery of Exchange and SQL databases.

FRS combines LUN copy creation and database recovery features for use with HP StorageWorks EVA and HP StorageWorks XP disk arrays. Using the Microsoft VSS (Volume Shadow Copy Service), FRS creates and manages recovery-ready copies of the production Exchange 2003 storage groups or SQL 2000 databases to be used in the event of a disaster. FRS allows you to recover storage groups and databases in minutes rather than the hours typically required for a conventional restore from backup.

Unless otherwise noted, the term *disk array* refers to these disk arrays:

HP StorageWorks Enterprise Virtual Array 5000 (EVA)

HP StorageWorks Enterprise Virtual Array 3000 (EVA)

HP StorageWorks XP128

HP StorageWorks XP1024

Related information For information about the disk arrays, please refer to the owner's manuals.

Prerequisite information

The instructions in this guide are intended for system administrators who have the following skills and knowledge:

- A background in direct access storage device subsystems and their basic functions
- Familiarity with disk arrays (EVA and XP) and related disk array management software such as CommandView EVA and CommandView XP
- An understanding of VSS installation and configuration of the secondary volumes within VSS
- Familiarity with the server operating system Windows 2003

- Familiarity with Exchange 2003 administration
- Familiarity with SQL 2000 administration

For information and documentation about related products, see the HP web site:

www.hp.com

For Exchange 2003 and SQL 2000 information, see the Microsoft web site:

www.microsoft.com

Disk array firmware and software dependencies

This guide describes FRS behavior based on features implemented in the latest disk array firmware and software versions:

XP firmware version 21.08.23

Raid Manager Library version 1.07.03

CommandView XP version 1.7B

EVA firmware version 3.014

CommandView EVA version 3.1

VCS version 3.014

Technical support

For the most current information about related products, visit the support web site:

www.hp.com/support/stressfree

For information about product availability, configuration, and connectivity, consult your HP account representative.

Revision history

March 2004	First edition for Exchange 2003.
June 2004	Second edition for v2.00.00.

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Fast Recovery Solutions features

HP StorageWorks FRS 2003 for Exchange 2003 and SQL 2000 provides these features:

- Supports HP StorageWorks disk arrays, including the XP1024, XP128, EVA3000, and EVA5000
- Provides fast recovery of large Microsoft Exchange 2003 storage groups and SQL 2000 databases
- Minimizes downtime in the event of an Exchange 2003 or SQL 2000 corruption
- Allows independent recovery of Exchange 2003 storage groups or SQL 2000 databases
- Supports multiple backup utilities
- Supports multiple instances of production Exchange 2003 or SQL 2000 servers from a single FRS management server
- Supports Microsoft Cluster Services
- Includes Command Line Interface (CLI) feature for FRS copy creation
- Creates and maintains multiple point-in-time recovery LUNs

The FRS concept

FRS 2003 is a client-server array-based tool designed to enable fast recovery when Exchange 2003 storage groups or SQL 2000 databases are damaged.

FRS stages recovery-ready copies of databases through interaction with Windows 2003, the disk array, Microsoft Volume Shadow Copy Service (VSS), and either the Exchange 2003 or SQL 2000 production server. These copies can be used in the event of damage to the production storage groups or databases. They can also be mounted on separate servers and used for development and testing.

The FRS life cycle works as follows: FRS is scheduled to periodically capture copies of Exchange storage groups and/or SQL databases. FRS creates, maintains, and manages these “recovery-ready” copies. When a catastrophic event occurs, the Exchange or SQL administrator starts the FRS recovery process, which automatically replaces the damaged storage group or database with the known good recovery-ready copy that was created previously. FRS then brings the newly recovered database online and user access is restored.

Actual time to replace the corrupt storage group or database varies based on the size of the LUN involved and activity taking place on the disk array.

FRS is valuable to enterprises with high availability requirements for their large, centralized Exchange 2003 or SQL 2000 environments. FRS enables such enterprises to improve service level agreements and reduce chances of significant loss due to downtime of their Exchange 2003 or SQL 2000 databases.

FRS 2003 and the total HP high-availability solution

HP provides a total high-availability solution package from high-end storage to software and support. Fast Recovery Solutions is part of the high-availability offering, which includes

- Disk arrays
- HP StorageWorks Business Copy XP
- HP StorageWorks Business Copy EVA
- HP StorageWorks RAID Manager Library XP
- CommandView XP
- CommandView EVA
- Fast Recovery Solutions
- Servers and software
- Storage consulting services
- Post-sales total solution support

Prerequisites and limitations

This chapter pertains to both Exchange 2003 and SQL 2000. The following items are described in this chapter:

- Hardware/software checklist
- Server architecture for FRS
- VSS requirements
- Exchange 2003 Server configuration
- SQL 2000 Server configuration
- Limitations

Hardware/software checklist

Required for either Exchange 2003 or SQL 2000

- ☐ Disk Array: XP1024, XP128, EVA3000, or EVA5000
- ☐ HP StorageWorks Business Copy software
- ☐ CommandView
- ☐ RAID Manager Library (*XP only and a requirement of VSS*)
- ☐ Microsoft Windows 2003 Enterprise Edition or Datacenter

Required for Exchange 2003

- ☐ Microsoft Exchange 2003 Server
- ☐ Copy the **eseutil.exe** and **ese.dll** files to the **c:\hpfrs2003** directory

Required for SQL 2000

- ☐ Microsoft SQL 2000 Server

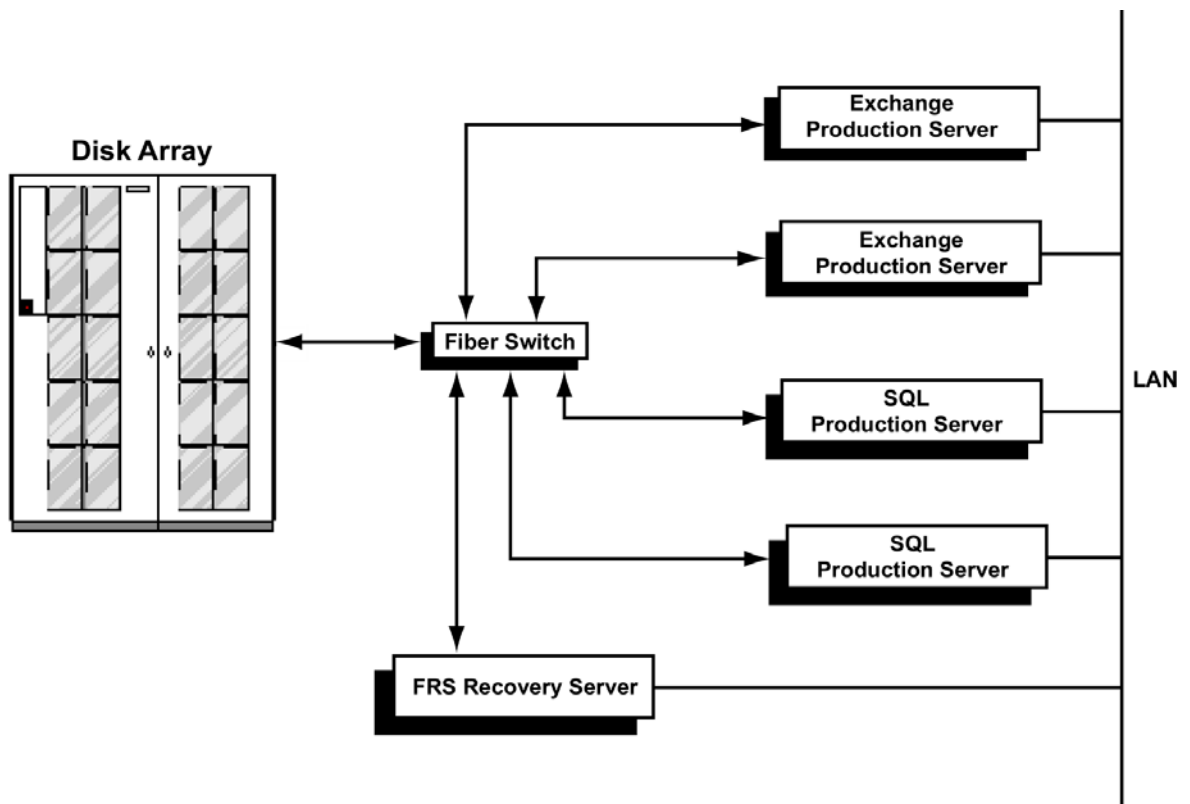
Ensure that the latest patches are installed. Refer to the **readme.txt** file delivered with this product.

Server architecture for FRS

XP or EVA disk array

A possible architecture for using FRS with an XP or EVA disk array is shown below.

Important: FRS 2003 supports only a homogeneous disk array solution, which may include only ONE of the following: XP1024, XP128, EVA5000, or EVA3000. However, you can run multiple disk array models by using multiple FRS recovery servers. For instance, if you run Exchange 2003 on an XP1024 and SQL Server 2002 on an EVA5000, you would require two separate mutually exclusive FRS recovery servers, each connected to its own disk array with no shared components.



VSS requirements

FRS 2003 requires that Microsoft Windows 2003 with HP's Volume Shadow Copy Service (VSS) Hardware Provider be installed and configured on each production server. The FRS management server and each recovery server use VSS configured volumes as recovery volumes. FRS maintains multiple recovery-ready copies of the production data as long as there are VSS-created volumes available to receive the copies.

Each array has its own configuration requirements for VSS/VDS Hardware Provider. For example, the EVA VSS Hardware Provider must be configured for SNAPCLONES, not SNAPSHOTs. Refer to the VSS/VDS Hardware Provider documentation for more information.

If you need further assistance with VSS configuration, contact your HP service representative or see the HP Hardware Provider documentation at the following internet location:

<http://h20000.www2.hp.com/bc/docs/support/SupportManual/lpg29349/lpg29349.pdf>

Exchange 2003 server configuration

FRS 2003 works within the limits of Exchange 2003. No more than five databases per storage group and no more than four storage groups per Exchange instance are supported.

FRS 2003 manages Exchange 2003 at the storage group level. The following configuration rules apply:

- All databases within a storage group must reside on one LUN of the HP disk array. Databases cannot be separated onto different storage LUNs.
- The logs for each storage group must also reside on an HP disk array LUN, and the logs and the checkpoint file must remain together on the same LUN.
- The LUN that the databases reside on and the LUN that the logs reside on must NOT be the same LUN.

FRS2003 requires a copy of **eseutil.exe** and **ese.dll** to reside in the installation directory (**c:\hpfrs2003**).

SQL 2000 server configuration

Only Windows Authentication is supported with this release of FRS 2003. Windows Authentication allows the Microsoft SQL Server 2000 to share the same user name and password used for Windows. This allows you to log into Microsoft SQL Server without supplying a user name and password. Windows Authentication provides other benefits as well. Refer to the Microsoft SQL 2000 documentation for details.

Limitations

FRS 2003 supports basic disk configuration. Dynamic disks are not supported.

Only one instance of FRS can be running at one time. Run FRS only from one management console to prevent simultaneous commands to FRS from different sources. This could cause corruption.

FRS 2003 supports only a homogeneous disk array solution, which may include only ONE of the following: XP1024, XP128, EVA5000, or EVA3000. If you want to run FRS 2003 on XP1024 and EVA5000 disk arrays, for example, you will need two mutually exclusive recovery servers—one per disk array.

You can find current supported versions of libraries, patches, fixes, and service packs in the **readme.txt** file.

Installation

This chapter covers installing, uninstalling, and licensing FRS. **You must have Administrator privileges to perform these tasks.**

Complete the following before installing FRS:

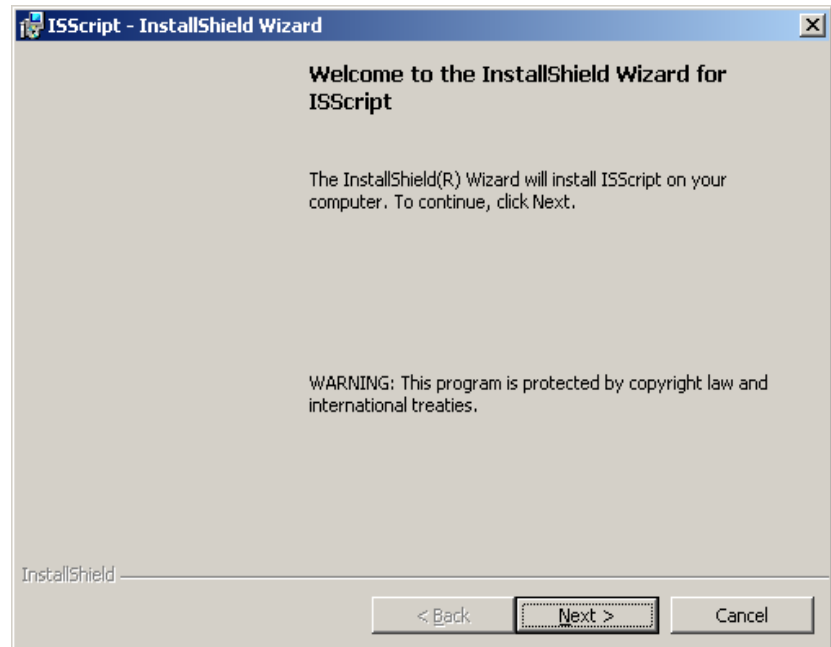
- *(XP only)* Install RAID Manager Library on all production and recovery servers. Do this before installing VSS/VDS providers.
- *(EVA only)* Install SecurePath on all production and recovery servers.
- Install VSS Hardware Provider on each production and recovery server.
- Ensure Exchange 2003 databases (mailboxes) within a given storage group all reside on the same LUN on the production servers.
- *(XP only)* Make VSS recovery LUNs available to the FRS system.
- Establish network connectivity among the disk array, CommandView stations, and all production and recovery servers.
- Install Business Copy licenses on CommandView stations.

Installing FRS on recovery and production servers

FRS is required on all servers participating in FRS. This includes the recovery server and all production servers. For example, if one FRS recovery server will host two Exchange 2003 servers and an SQL Server 2000 server, you must install FRS on all four servers.

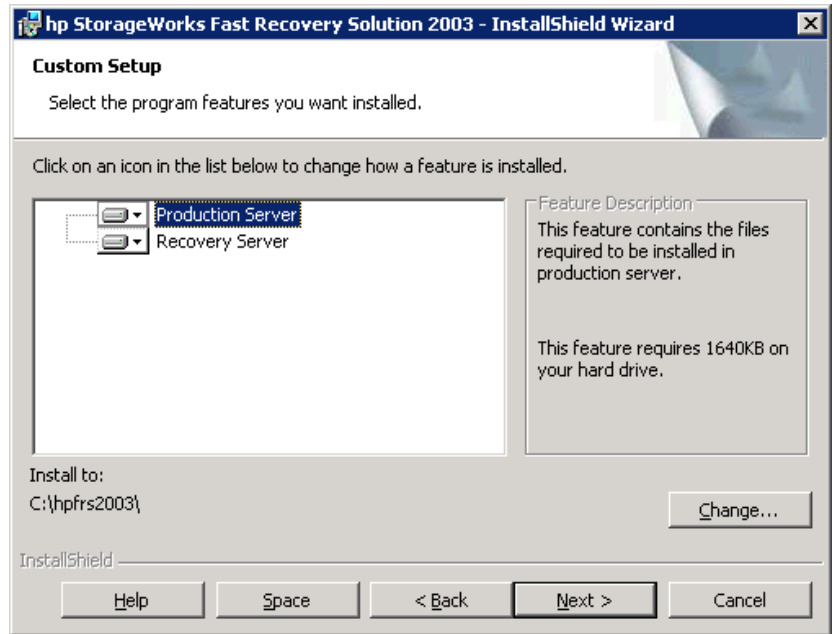
Installation for each production or recovery server is identical, except for the Custom Setup window:

1. Download FRS2003 from the hp.com web site or open the FRS 2003 CD and launch the **ISScript8.Msi** file. This will ensure that a script engine is available for the installation process.



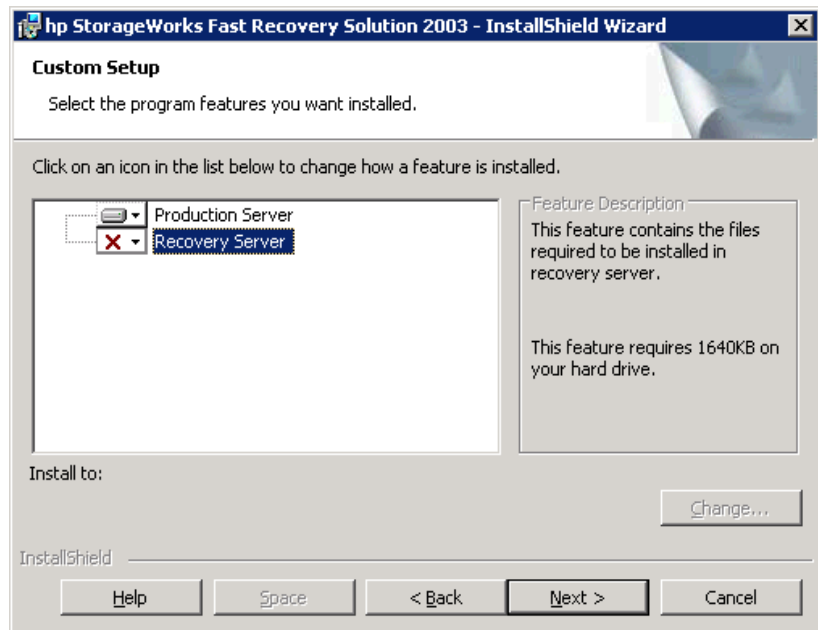
2. Click **Next** and read the license agreement.
3. Click **Install** to install ISScript on the recovery server.
4. When ISScript installation completes, click **Finish**.

5. Launch the **hp StorageWorks Fast Recovery Solution 2003.msi** file. The installation wizard opens.
6. Click **Next**. The **Custom Setup** window opens.



Use the default location shown in the **Install to:** line of the Custom Setup window for installing the files.

7. Click the disk icon for the type of server you want to install (Production Server or Recovery Server) and select “**This feature will be installed on local hard drive**”.
8. Click the disk icon for the type of server you **DO NOT** want to install (Production Server or Recovery Server) and select “**This feature will not be available.**” Make sure the server icon you are **NOT** installing is marked with an “X”.



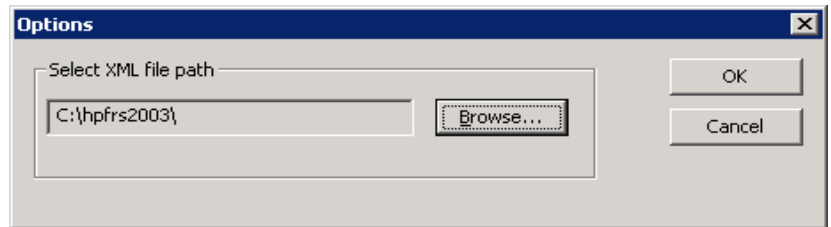
9. Click **Next**.
10. Click **Install**. Installation begins.
11. When installation completes, click **Finish**.
12. Repeat the installation on all additional servers participating in FRS. Be sure to select the correct server icon each time and to deselect the unwanted icon so that it is marked with an “X”.

Recovery server XML files

FRS 2003 uses XML technology to maintain LUN information in the default directory: **C:\hpfrs2003**. The following procedure explains how to change the location of this directory:

1. Start FRS 2003 on the recovery server by clicking **Start->Programs->Hewlett-Packard->hpfrs2003->hp StorageWorks Fast Recovery Solution 2003**.
2. Click the **ShadowCopy** menu and click **Options**.

The Options window containing the default location appears.



3. Click **Browse**, browse to a directory of your choice, and click **OK**.
4. Click **OK** in the Options window to change the default XML file path.

Uninstalling FRS

You can uninstall FRS in one of two ways: by using the FRS CD or by using the Windows **Add/Remove Programs** feature in the Control Panel.

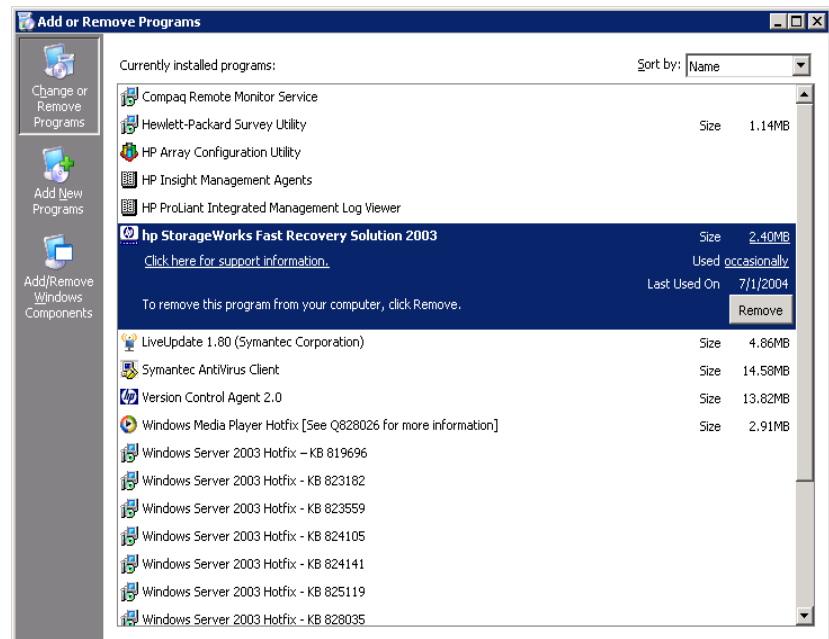
With either method, the uninstall script prompts you to remove FRS from the system.

To uninstall FRS with the CD:

Open the FRS CD. Click **setup.exe** to launch the uninstall script.

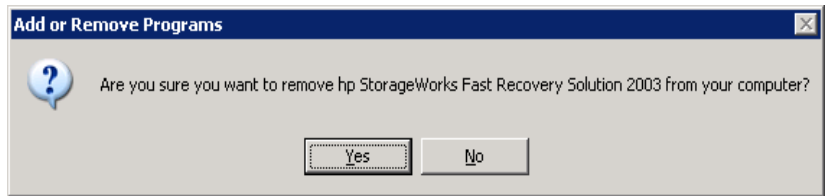
To uninstall using Add/Remove Programs:

1. Click the **Start** menu, click **Settings**.
2. Open **Add/Remove Programs**.
3. Find the **hp StorageWorks Fast Recovery Solution 2003** entry and select it.



4. Click **Remove** to launch the uninstall script.

A confirmation window asks “Are you sure...”

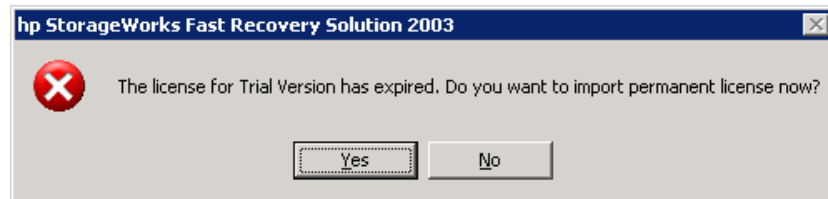


5. Click **Yes** to remove FRS from the server. The removal process takes a few minutes.

FRS AutoPass licensing

When you start FRS 2003, a window notifies you how many days remain before your trial version of the software expires.

If your AutoPass trial version license has expired, this message appears:

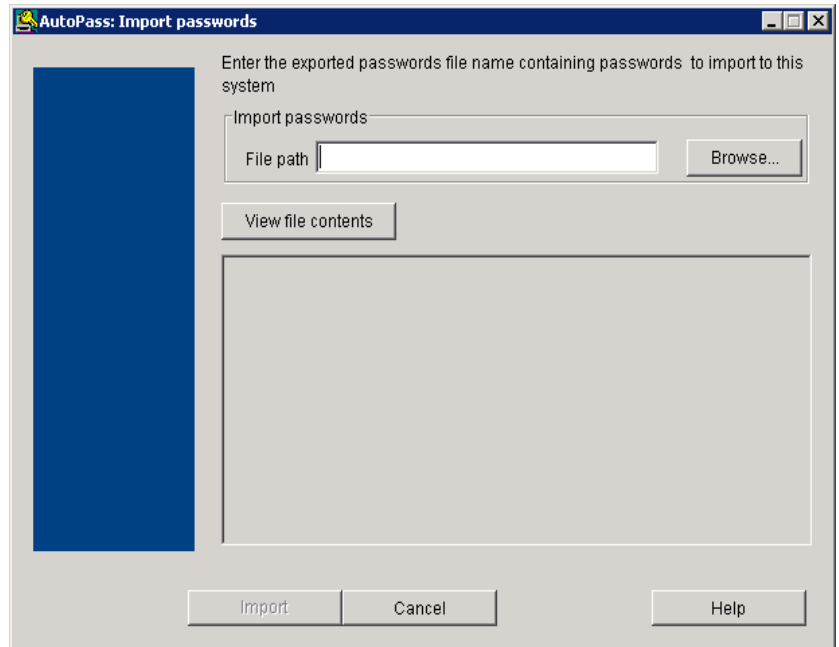


Click **Yes** to install the permanent license, or click **No** to exit FRS.

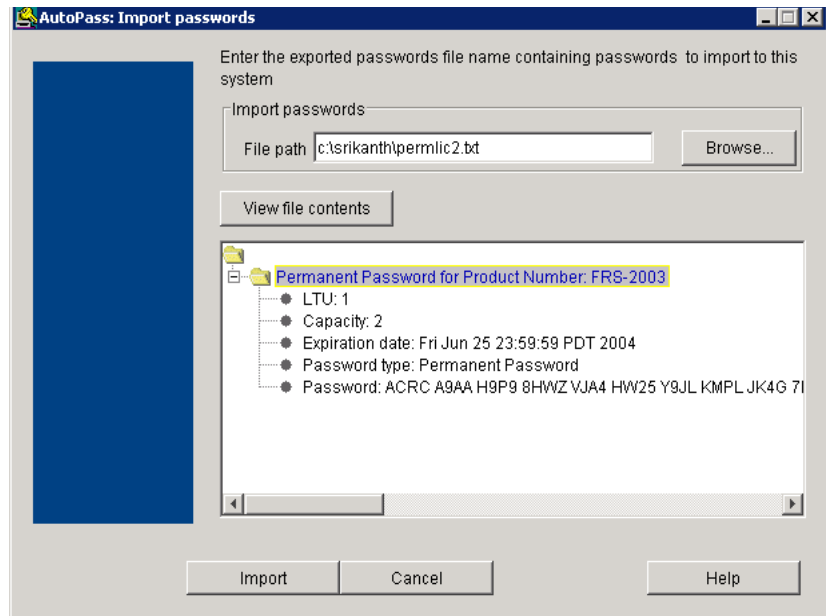
Permanent license installation

Use the following procedure to install the permanent license:

1. When you click **Yes** on one of the preceding license notification windows (the “days remaining” window or the “license expired” window), the AutoPass: Import passwords window opens.

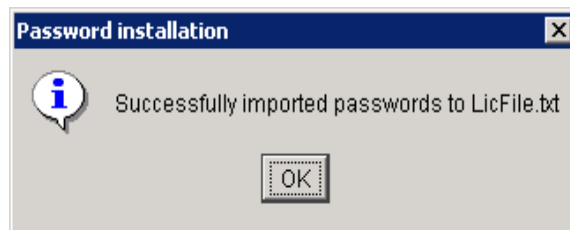


2. Click **Browse** to locate the license file. HP will inform you as to the name and location of the file. The file path shows in the file path portion of the window.
3. Click **View file contents** to display the licenses (also known as permanent passwords) stored in the license file.



4. Select the item Permanent Password for Product Number: FRS-2003 in the display to highlight it (as shown above).
5. Click **Import** to import the selected permanent password.

The message below indicates a successful password import.



6. Click **OK**. This completes permanent license installation.

Command line license installation

If you are installing a permanent license before the trial version expires, a command line application called **ImportLicense.exe** allows you to install the license. This application is provided as a command line alternative to GUI permanent license installation. Once you have execute the **ImportLicense.exe** executable file, the previously described AutoPass: Import Passwords window displays. Follow the procedure for [“Permanent license installation”](#) (page 31).

Instance count check

If you are running too many instances of FRS for the license you own, you may receive a warning message. This message appears under the following conditions:

- The recovery server is connected to a production server running more than the licensed number of instances.
- A recovery server is connected to multiple production servers and the total number of Exchange and SQL instances running are more than the licensed capacity.
- The product is already running the maximum number of instances when you try to add another instance by clicking **Add Exchange Server Instance** or **Add SQL Server Instance** from the **File** menu.

The following items are explained in this chapter:

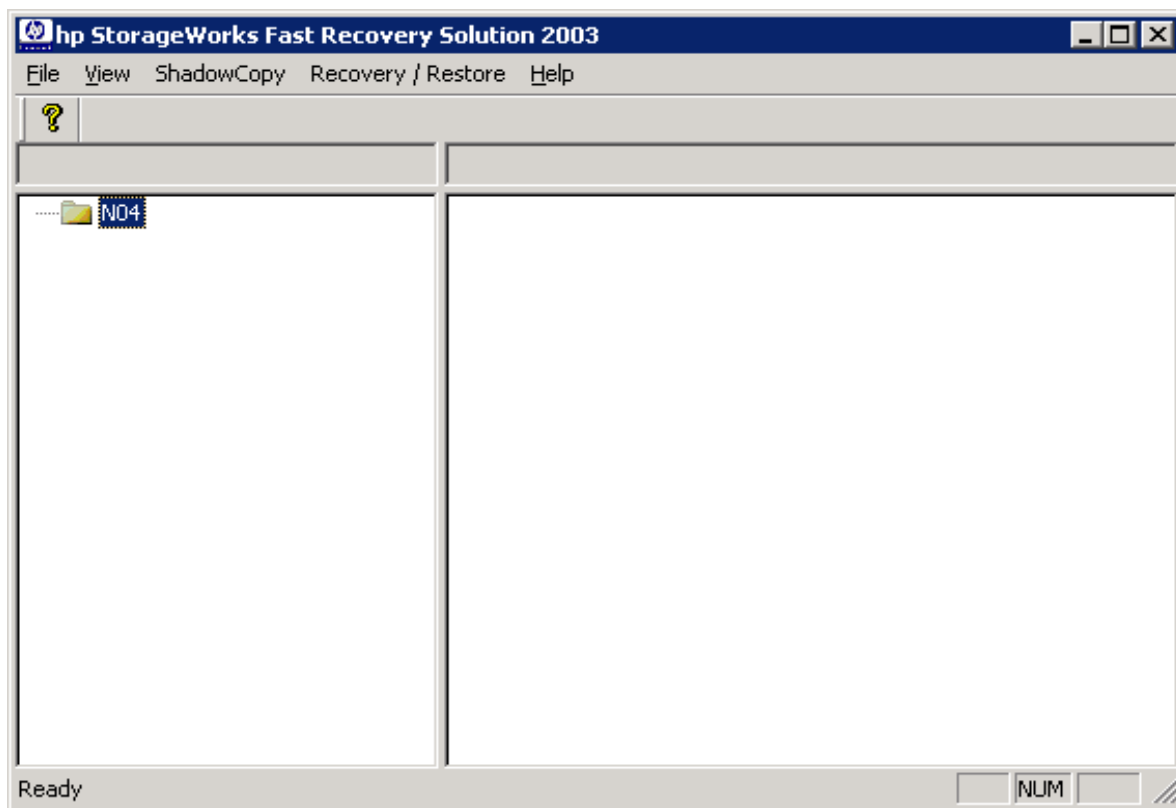
- Using FRS
- Creating shadow copies
- Executing an FRS 2003 recovery
- Using the command line interface

Using FRS

Opening FRS 2003

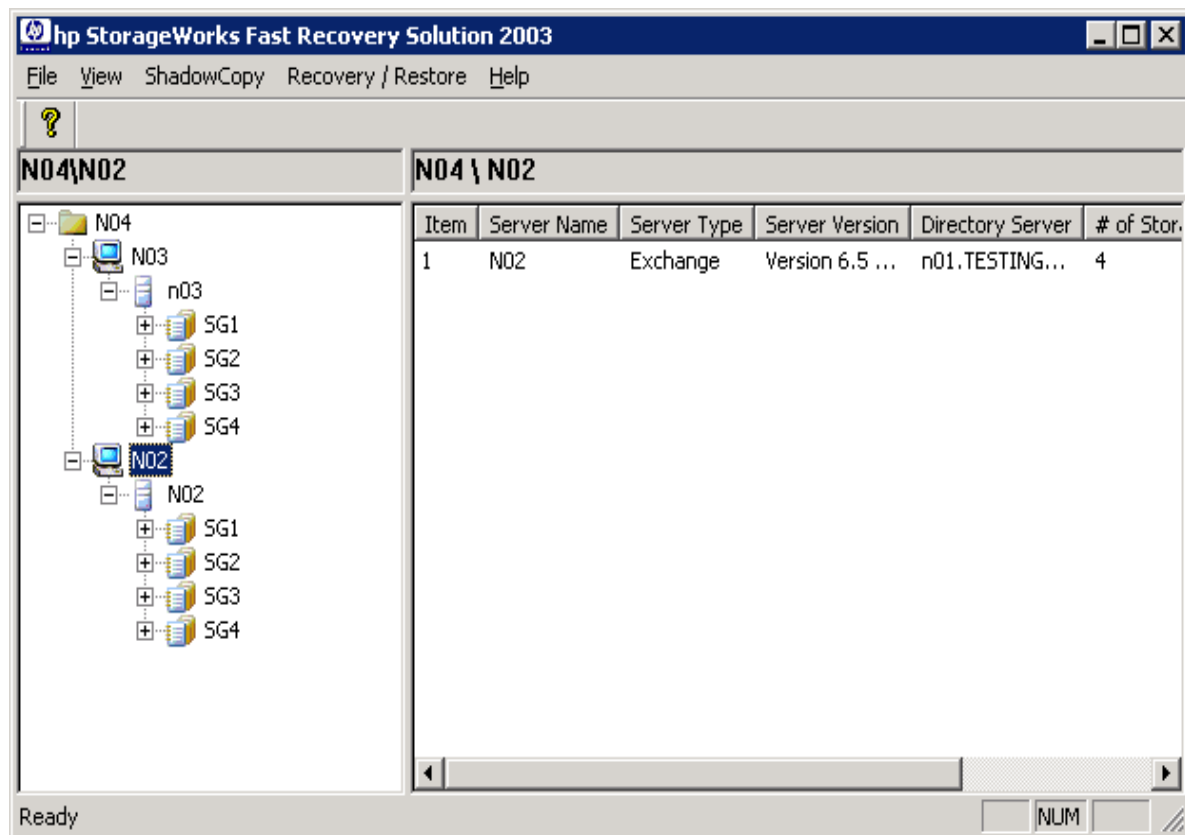
1. Click the Windows **start** button, and select **programs**.
2. Click **Hewlett-Packard**.
3. Click **HPFRS 2003**.
4. Click **HP Fast Recovery Solutions 2003**.

The FRS main window opens.



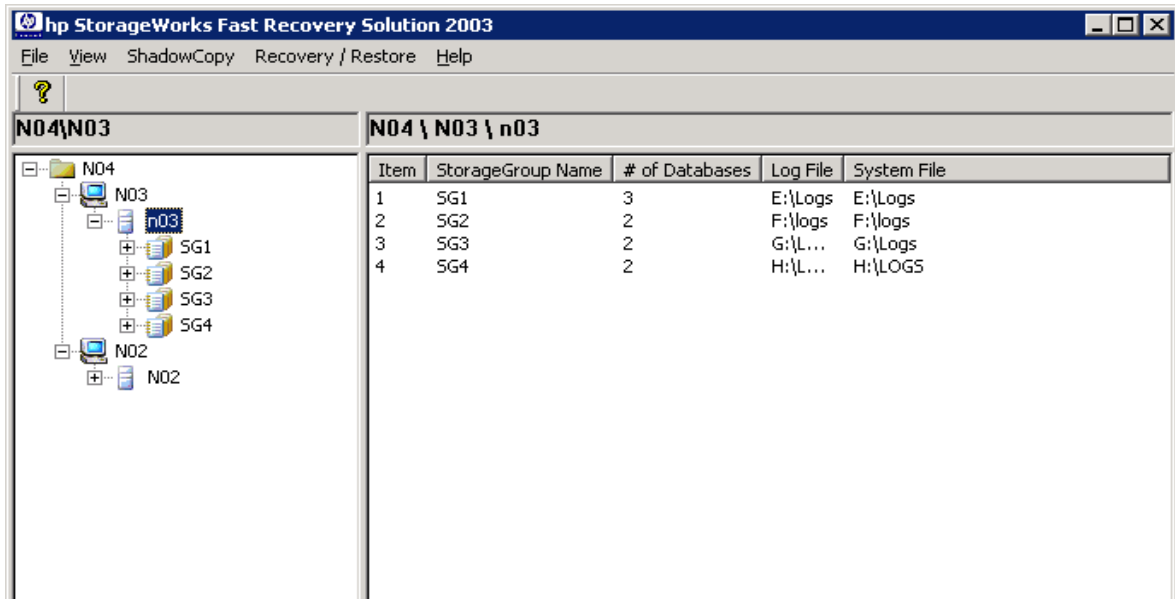
Using the main window

The following example shows the FRS 2003 main window after two Exchange 2003 server instances have been added.

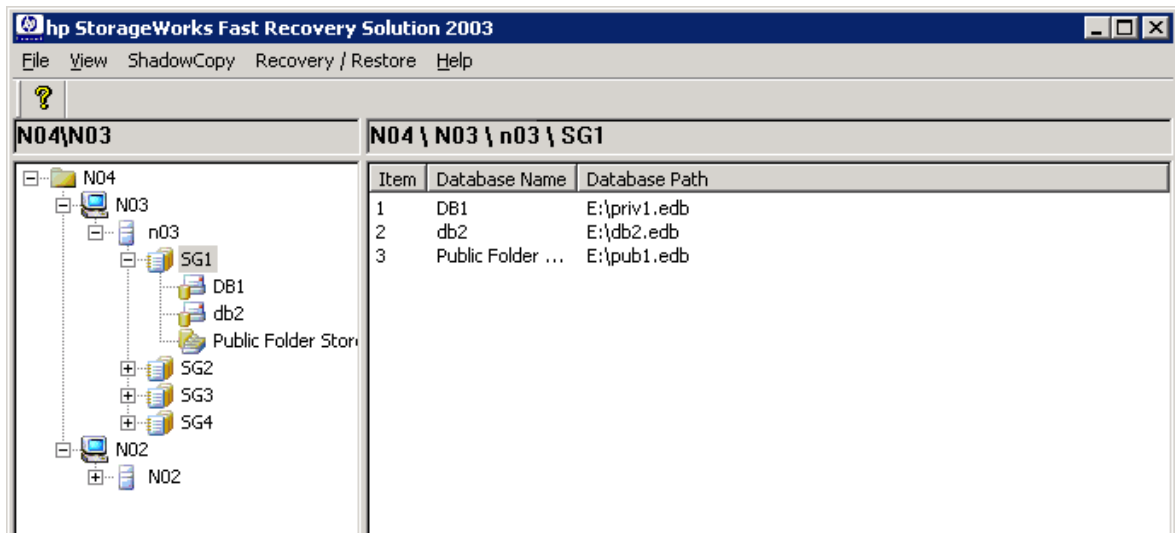


To expand a server instance:

1. Click the plus symbol (+) next to a server instance in the left pane of the main window. This displays the detail views of the storage groups.



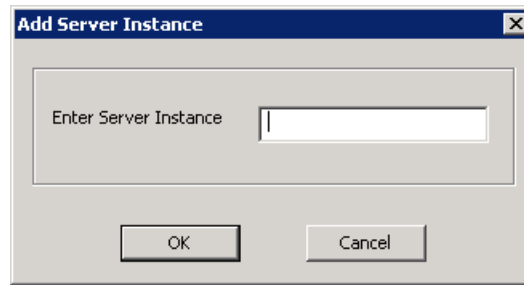
2. Click a storage group or database to display the location and path of that LUN in the right pane of the main window.



Adding server instances

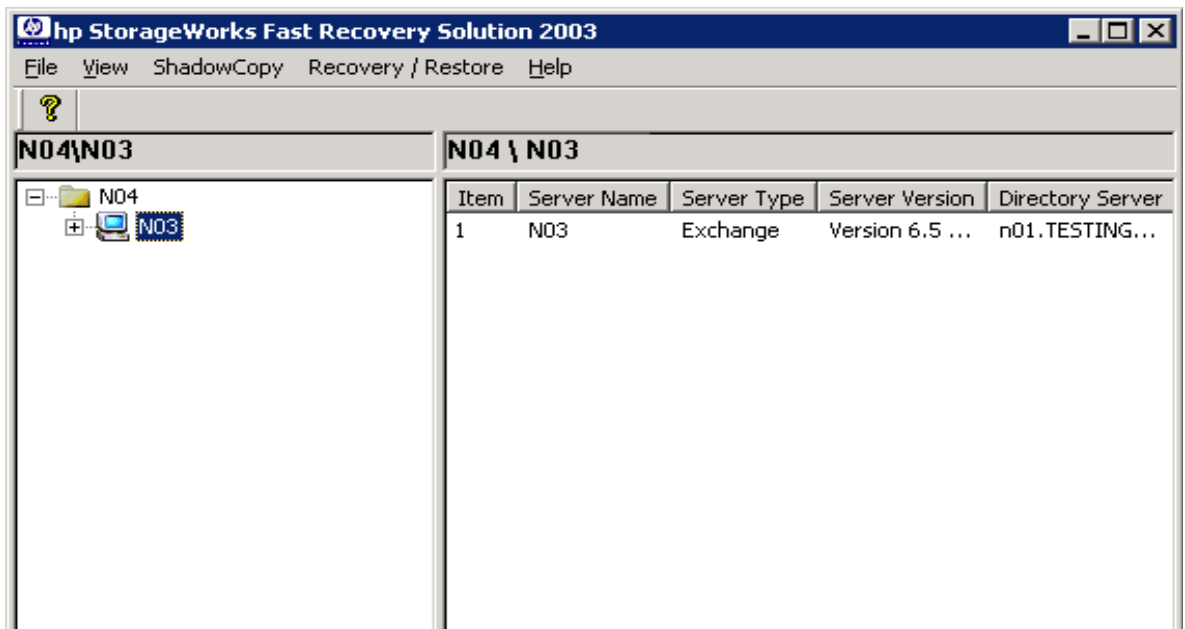
1. On the FRS main window, click the **File** pulldown menu and click either **Add Exchange Server Instance** or **Add SQL Server Instance**.

The Add Server Instance window opens.



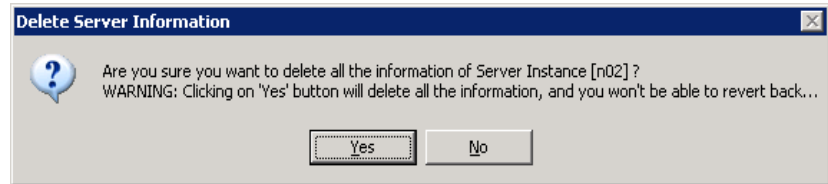
2. In the “Enter Server Instance” box, enter the instance name in the field and click **OK**.

The FRS main window opens and shows the new server instance in the left pane.



Deleting server instances

1. Click the server instance to highlight it.
2. Click **File** and click **Delete Server Instance**. A confirmation window opens.



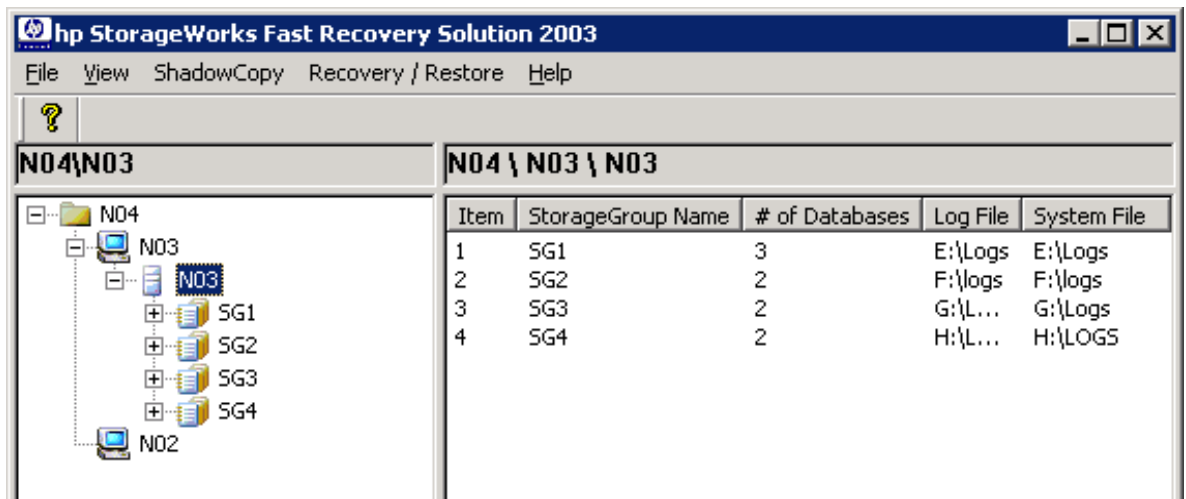
3. Click **Yes** to confirm your choice.

Creating shadow copies

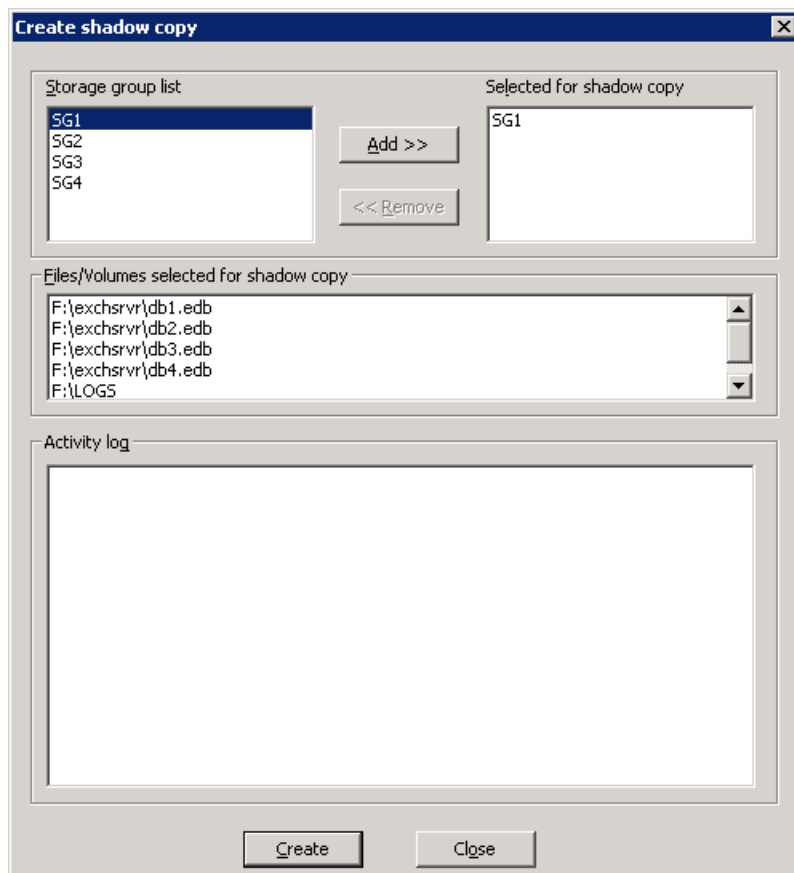
A primary feature of FRS 2003 is creating shadow copies of production LUNs. FRS 2003 then manages these copies. If a production database is lost because of a failure or catastrophic event, FRS restores the production database from a shadow copy.

To create shadow copies of production LUNs:

1. Select the server instance you want to copy from. The example below shows Exchange 2003 Server “N03” selected.



2. Click **ShadowCopy** in the menu bar, and click **Create Shadow Copy**.
The Create shadow copy window opens.



3. Select the storage group to be copied and click **Add**.

The storage group to be copied appears in the “Selected for shadow copy” list, and the associated databases appear in the “Files/Volumes selected for shadow copy” list.

4. Click **Create** at the bottom of the Create shadow copy window.

Storage group copying begins. The copying actions display in the “Activity log” pane of the window, ending with a “finished” message.

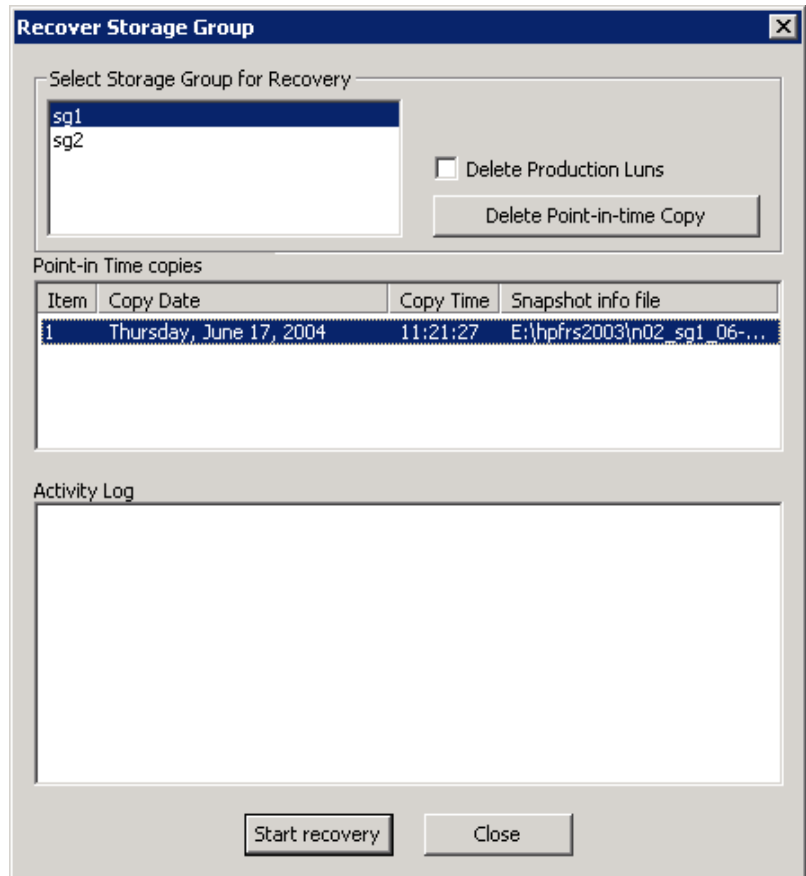
5. When copying ends, click **Close** to close the window.

FRS now has a recovery-ready LUN containing the shadow copy of the storage group or database. You can create shadow copies as often as needed.

Executing an FRS 2003 recovery

1. Click **Recovery/Restore** on the menu bar, and click **Recovery**.

The Recover Storage Group window opens.



2. Select the storage group to recover. A list of point-in-time copies displays, allowing you to choose the copy to recover. HP recommends you choose the most recent known-good copy.
3. Click **Start Recovery**. The progress of the recovery displays in the activity log pane.

4. When the log shows the recovery is finished, click **Close** to close the window.

The Recover Storage Group window includes two more options: **Delete Production LUNs** and **Delete Point-In-Time Copy**.

Select **Delete Production LUNs** when you want to delete the original production LUN after a recovery. For example, if you no longer need a LUN that is about to be recovered, you can select this option in order to free up the disk space it uses.

Use **Delete Point-In-Time Copy** when your pool of point-in-time copies grows too large. Select the copies you want to delete, and click **Delete Point-In-Time Copy**.

Using the command line interface

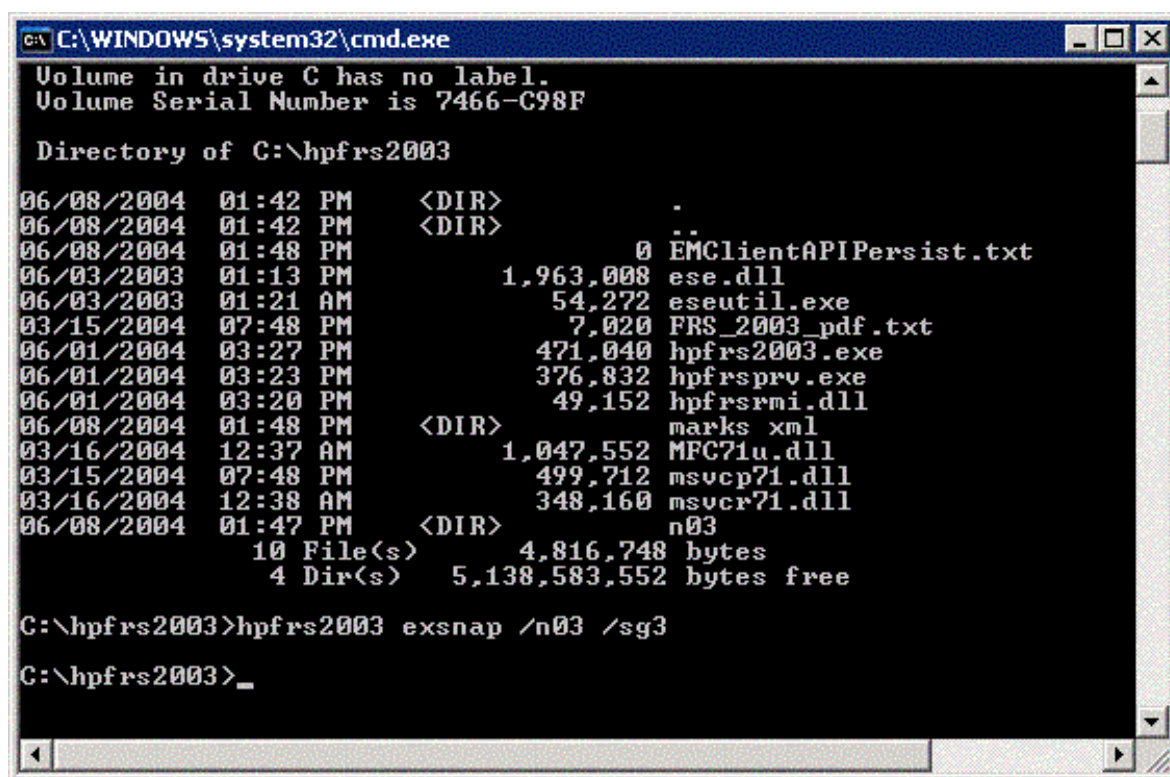
To run FRS from the command line:

1. Change directory (CD) to the location where FRS is installed. The location is **C:\hpfrs2003**.
2. Type one of these commands, and press Enter:

Exchange 2003 **hpfrs2003 exsnap** /<exchange instance name> /<storage group name>

SQL 2000 **hpfrs2003 sqlsnap** /<SQL instance name> /<database name>

The example below shows correct Exchange 2003 syntax. This example takes a “snapclone” of storage group “sg3” on server “n03”.



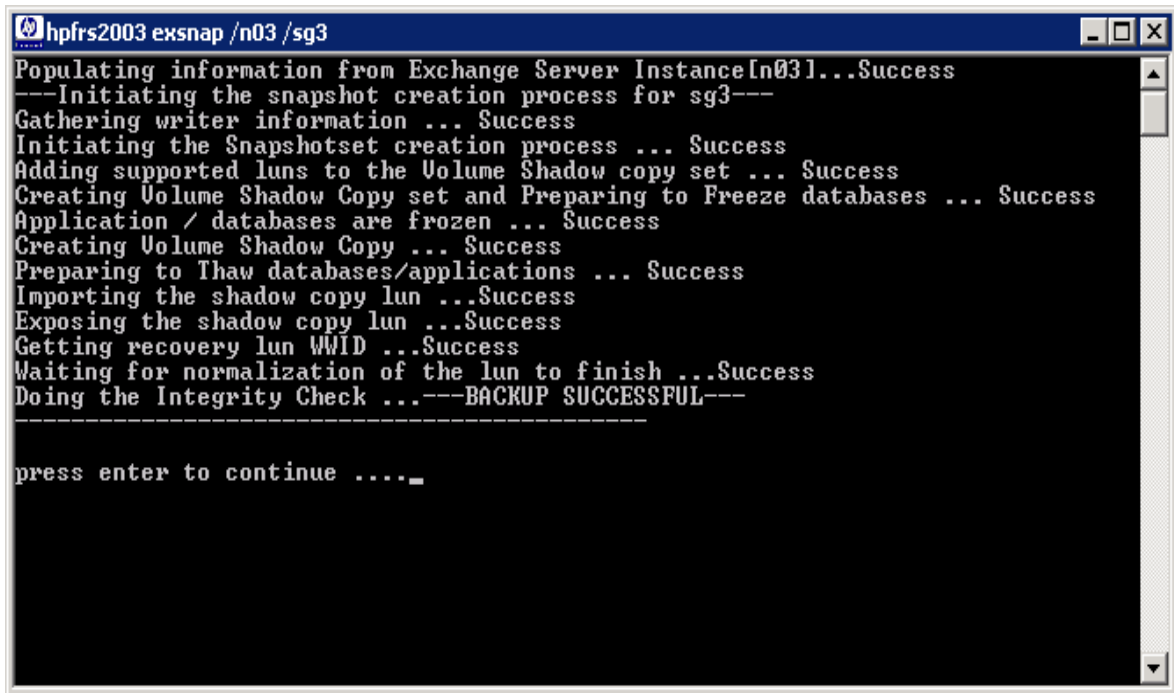
```
C:\WINDOWS\system32\cmd.exe
Volume in drive C has no label.
Volume Serial Number is 7466-C98F

Directory of C:\hpfrs2003

06/08/2004  01:42 PM    <DIR>          .
06/08/2004  01:42 PM    <DIR>          ..
06/08/2004  01:48 PM                0  EMClientAPIPersist.txt
06/03/2003  01:13 PM      1,963,008  ese.dll
06/03/2003  01:21 AM        54,272  eseutil.exe
03/15/2004  07:48 PM         7,020  FRS_2003_pdf.txt
06/01/2004  03:27 PM      471,040  hpfrs2003.exe
06/01/2004  03:23 PM      376,832  hpfrsprv.exe
06/01/2004  03:20 PM        49,152  hpfrsrmi.dll
06/08/2004  01:48 PM    <DIR>          marks.xml
03/16/2004  12:37 AM      1,047,552  MFC71u.dll
03/15/2004  07:48 PM      499,712  msucp71.dll
03/16/2004  12:38 AM      348,160  msucr71.dll
06/08/2004  01:47 PM    <DIR>          n03
                10 File(s)      4,816,748 bytes
                4 Dir(s)   5,138,583,552 bytes free

C:\hpfrs2003>hpfrs2003 exsnap /n03 /sg3
C:\hpfrs2003>_
```

While the snapclone is being created, a second window (below) opens to display progress. The phrase “BACKUP SUCCESSFUL” indicates successful creation of a snapclone.



```
hpfrs2003 exsnap /n03 /sg3
Populating information from Exchange Server Instance[n03]...Success
---Initiating the snapshot creation process for sg3---
Gathering writer information ... Success
Initiating the Snapshotset creation process ... Success
Adding supported luns to the Volume Shadow copy set ... Success
Creating Volume Shadow Copy set and Preparing to Freeze databases ... Success
Application / databases are frozen ... Success
Creating Volume Shadow Copy ... Success
Preparing to Thaw databases/applications ... Success
Importing the shadow copy lun ...Success
Exposing the shadow copy lun ...Success
Getting recovery lun WWID ...Success
Waiting for normalization of the lun to finish ...Success
Doing the Integrity Check ...---BACKUP SUCCESSFUL---
-----
press enter to continue ...._
```

Glossary

BC	HP StorageWorks Business Copy XP. Software that creates and maintains local copies of data stored on the disk array. The copies can be used for data duplication, backup, and local disaster recovery.
cluster	The concept of linking individual servers physically and programmatically and coordinating communication between them so they can perform common tasks.
EVA	HP StorageWorks Enterprise Virtual Array.
failover	Process that automatically shifts the workload from one server in a cluster to another server in the event of a failure.
FRS	HP StorageWorks Fast Recovery Solutions.
FRS server	The server where copies of the production database are staged and managed. The FRS server runs the FRS GUI. Also known as the recovery server.
LDEV	Logical device. An LDEV is created when a RAID group is divided into pieces according to a selected host emulation mode (that is, OPEN-3, OPEN-8, OPEN-9, etc.). The number of resulting LDEVs depends on the selected emulation mode. The term LDEV is often used synonymously with the term volume.
LUN	Logical unit number. A LUN results from mapping a SCSI logical unit number, port ID, and LDEV ID to a RAID group. The size of the LUN is determined by the emulation mode of the LDEV, and the number of LDEVs

associated with the LUN. For example, a LUN associated with two OPEN-3 LDEVs will have a size of 4,693 MB.

LUSE	Logical unit size expansion. The technology of combining single LUNS and presenting them to the operating system as a single LUN.
online backup	Backup while Exchange services are still running. There is no interruption in services for backup.
P-VOL	The primary or main volume that contains the data to be copied.
production server	Exchange 2003 or SQL 2000 server.
RAID	Redundant array of independent disks.
recovery server	FRS server. The server where copies of the production database are managed.
shadow copy	A copy of a production database created by FRS and stored on a recovery server for use in restoring the production database in the event of a failure.
S-VOL	Secondary or remote volume. The copy volume that receives data from the primary volume.
Snapclone	Secondary copies of the databases that are created using the EVA storage appliance.
VSS	Microsoft Virtual Shadow Copy Service.

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